

Vertical Take-off Unmanned Aerial Vehicle with Forward Flight Transition

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Abstract: *This paper presents the findings from a capstone project that was to design a drone capable of functioning as vertical take-off Unmanned Aerial Vehicle (UAV) with a conversion to horizontal flight. It could serve as stable controlled flight using a simulator based iterative design process. The vehicle was intended to work in an environment where tedious or boring jobs could be automated. The vehicle design concepts were created through research, benchmarking, design metrics, and virtual flight testing. Both the simulation model and demonstration vehicle adhered to the aim and goals of the project. This project demonstrates the acceleration in design timelines that can be achieved, even by an undergraduate engineering student, who becomes skilled in using an advanced knowledge-based simulation tool.*

Keywords: *Aerospace, Unmanned Aerial Vehicle (UAV), Vertical Take-off and Landing (VTOL), Simulation*